

Flight, May 8th, 1909.

Flight

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Brothers Wilbur (on left) and Orville Wright, who have made a two days' visit to London this week, leave War Office on Monday morning last, after an interview with Mr. Haldane.

FLIGHT.

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AN EPOCH-MAKING
WEEK FOR BRITAIN.

Of a truth, everyone who wishes to see this country in the forefront of progress has reason to be gratified with the public doings of the past few days. A week ago unification of representation for the British aeronautic movement, practical recognition by the Government of the present needs of the hour, and the formation of a strong non-political party to foster aviation in both Houses of Parliament were developments that were obviously to be desired but were prospective stepping-stones to better things that might or might not be very near accomplished facts. To-day, however, the outlook is very bright indeed, inasmuch as the shadow of those events has been definitely converted into the substance, and the people of this country now have potent official influences at work to ensure the speedy and economic encouragement of flight in the British Isles.

One and all the events to which we refer are of a nature that can be accorded an enthusiastic welcome throughout the length and breadth of the British Empire, but priority may perhaps be given to the action of the present Government in appointing a Special Committee to superintend the aeronautical work of the Army and the Navy, in deputing the National Physical Laboratory at Teddington to organise a special research department, and in making the necessary provisions whereby adequate funds will be placed at the disposal of all these various bodies. Mr. Asquith has done exceedingly well to follow up the report of the Committee of Imperial Defence in this pre-eminently practical manner, and is, moreover, to be congratulated on his selection of Lord Rayleigh as president of the new Special Committee. Best of all, it appears from the statements of the Prime Minister in the House on Wednesday last that an immediate start is to be made, and that the financial arrangements have already been concluded.

"Influence is to be measured not by the extent of service it covers but by its kind," said Channing. In the course of a leader in FLIGHT some few weeks ago, we had occasion to draw attention to the need that existed for determining the respective spheres of

influence of the aeronautical bodies in Britain. We entirely unofficially as far as any of the concerned, certain broad lines of activity

that should be mutually recognised. Since then representatives of the various bodies in question have been in conference, with the happiest of results. Full details concerning the outcome of those deliberations are given on another page of this issue. At the moment it will suffice to point out that an altogether satisfactory issue seems to have been arrived at, and one which exactly follows the lines suggested in these columns, on the several occasions when this very subject has been broached by us.

Thus the Aeronautical Society of Great Britain, which is the oldest institution of its kind in the world, is to be regarded as the paramount scientific authority on aeronautical matters, and is to be consulted on all questions dealing with the scientific phases of the movement. The Aero Club of the United Kingdom is to be regarded as the paramount body in all matters of sport and "the development of the art of aeronautics." Thirdly, the Aerial League of the British Empire is to be regarded as the paramount body for patriotic movements and for education.

All this is logical, and as it should be. The flying movement is to be congratulated on having taken advantage at a relatively early stage of the experience of the motor movement in these islands, so there is now no likelihood of any weakening of the ranks of those who take an interest in aeronautics through factions having been set up among themselves. It must be perfectly plain to anybody not in the least versed in the politics of flight that the field is completely covered by the three bodies that have now made provision for complete unification of policy and unity of action. There is no need for the establishing of any other club, society or organisation in Britain to deal with the subject as a parent body; albeit we hope that in due season provincial clubs will be set up for the encouragement of aviation under the auspices of and in affiliation with the parent bodies, somewhat as has been done in the case of the county automobile clubs. That movement has furnished a sufficiently striking example of the utter unwisdom of internal dissensions. It is our earnest desire to do everything at all times in our power to insure the cohesion of all aeronautical bodies.

Young though the movement is in this country as regards effective work, it is highly gratifying to find that already a Parliamentary party has been organised for dealing with the matter in both Houses. Further, it will not act independently of those bodies especially devoted to the subject of flight, and therefore in the best position possible to advise and inform those members, alike of the House of Lords and of the House of Commons, who are willing to advance the cause of aerial navigation. Lord Montague of Beaulieu will be the representative of the movement among the Peers, and Mr. Arthur Du Cros, as Hon. Sec., with Mr. Arthur Lee as Chairman, and Mr. Cecil Harmsworth as Vice-Chairman, among the Commoners. To assist the Parliamentary Committee that is in process of formation, the Aeronautical Society, the Aero Club, and the Aerial League will each nominate three of their members to advise and otherwise aid when required. As Mr. Arthur Du Cros points out, the rapid development now taking place in aerial navigation has become a matter for grave consideration, more especially in relation to its bearing on our home defence. Highly important and very practical results have been arrived at already by foreign countries, while the construction of aerial fleets has been in rapid progress abroad for some time, but with no appreciable response from this country.

Happily, now there are not lacking practical signs that the authorities of the War Office, and the Government as already referred to, appreciate the significance of flying machines. On Monday, Messrs. Wilbur and Orville Wright paid a visit to Mr. Haldane, and, while naturally it is needful and fitting to preserve secrecy as regards official matters, it may be taken as assured that our Government will duly acquire Wright aeroplanes and that the famous American brothers will themselves instruct the first pupils in England.

The speeches at the functions which Messrs. Wilbur and Orville Wright attended on Monday and Tuesday evenings were of more than passing interest, particularly those that were made at the banquet given by the Aero Club. Lord Roberts sent a message that revealed the very keen appreciation he has of the urgency for Britain to play its part in the development of mechanical flight, while the interest taken in the proceedings by such men as the Premier, Mr. A. J. Balfour, Mr. Haldane, Mr. Reginald McKenna, and Sir Edward Ward, Permanent Under-Secretary of State for War, among others, is a sign of the times worth noting. In giving the toast of the evening, Mr. Roger Wallace used a happy phrase when he said that without disclosing any official secret he thought he might say that if the Government bought the secret of the Wright Brothers' invention, they could do no wrong. We believe that the Government is alive to the value of that invention, nor is it likely now to relax such efforts in the direction of placing Britain in a position with regard to the science of aerial navigation as is due to it in virtue alike of its great traditions, and

of the bare needs of changing conditions. Mr. Whitelaw Reid, the American Ambassador, pointed out that the two famous American brothers did not like speeches, nor had they any need to make them. What they had done spoke for them. They had done something which had been a synonym for impossibility. They had beggared the Arabian Nights and found a Magic Carpet. Presently machines of their design would be carrying the ammunitions of war, or, let us hope, messages of peace. Furthermore, he was glad to feel that in a manner it was English blood that had done this thing.

As yet it is too early for Messrs. Wright to have made definite engagements with regard to their return to this country, not for the purposes of being banqueted, but of demonstrating their machines in connection with negotiations of a significant nature. They may have thought their recent welcome a hearty one, but we assure them that the British public had scarcely an opportunity of hinting to them the tremendous admiration and the keen interest which it takes in their achievement. We hope that, without causing them any personal embarrassment, the conditions of their coming among us in the future will enable them to appreciate how immensely wide and enthusiastic is the admiration which their great achievements, modest natures, and superb determination have evoked here. Their first visit happens to have coincided with an epoch-making week for Great Britain's aeronautic prospects, and we trust that they will not need to use the word "hustle" by way of public admonition when next they set foot in England.



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VISIT OF THE BROTHERS WRIGHT TO THE AERO CLUB'S FLIGHT GROUNDS AT SHELLBEACH. A group in front of Muscle Manor, the Club House. Reading from left to right—Seated: Mr. J. T. C. Moore-Brabazon, Mr. Wilbur Wright, Mr. Orville Wright, and the Hon. C. S. Rolls. Standing: Mr. J. D. F. Andrews, Mr. Oswald Short, Mr. Horace Short, Mr. Eustace Short, Mr. Frank McClean, Mr. Griffith Brewer, Mr. Frank Butler, Dr. W. J. S. Lockyer, Mr. Warwick Wright.

UNIFICATION OF AERONAUTIC POLICY IN THE UNITED KINGDOM.

NOTHING that has hitherto been done in this country to further rapidity of progress in flight can compare, for sheer importance as regards the far-reaching influence which it will have for all time to come, with the latest step that has been taken by the Aero Club, the Aeronautical Society, and the Aerial League to ensure uniformity of policy and mutual recognition in all matters relating to the aeronautical movement, as from now onwards. Following very closely upon the lines which have frequently been advocated by ourselves in these columns, a definite understanding has been come to between the three bodies in question, the sphere and scope of each having been set forth in black and white in the agreement drawn up and signed by the respective Chairmen of those institutions and reproduced below. This fact, taken in conjunction with the formation of a strong Parliamentary Committee to push the interests of the movement in both Houses, cannot but assure unity of policy and efficiency of representation to an extent that would otherwise be impossible to attain. The agreement to which we refer includes a clause whereby three representatives from each of the paramount aeronautical associations are to be nominated for the express purpose of assisting the Parliamentary Committee, and hence this agreement may be deemed to constitute a completely satisfactory settlement of the official-organisation question for the United Kingdom. The agreement reads as follows :—

In view of the formation and development of various bodies instituted to promote the science and practice of aeronautics, and the general public interest which is now directed to this subject, it is of immediate importance that the chief of these bodies should at once arrive at an understanding by which they can co-operate with each other so as to have their respective spheres of operation clearly defined, in order that they may be each able to effect individually the best results, and to offer affiliation on favourable terms to all smaller bodies either already existing or which may hereafter be formed.

It is common knowledge that for the recent development of automobilism the want of such clear definition and agreement has led to a lamentable waste of effort and much unnecessary friction.

By a judicious and reasonable agreement at the present moment a working scheme can be contrived and a definite written agreement drawn up which will prevent a similar occurrence in the development of aeronautics ; and there are strong reasons for harmonious co-operation in aeronautics, which have not existed, at any rate to the same extent, in the development of automobilism.

Probably the chief of these reasons is that there is little commercial incentive at present in aeronautics, such as was to be found to induce the provision of capital necessary to develop the motor vehicle. Beyond this there is the general question which is extremely urgent —viz., that of national defence. The development of aeronautics must depend largely on three factors :—

1. Sport.
2. Scientific investigation.
3. The influencing of public opinion in the development of this subject from the point of view of national defence.

Now a moment's consideration will show that these are not only not antagonistic, but are vitally connected with each other, and interdependent for mutual encouragement and progress.

Thus, the very fact that there is so little commercial inducement to develop either flying machines or navigable balloons makes it



A PARLIAMENTARY

At a meeting of Members of Parliament held on Wednesday last it was decided that a permanent Committee of Members of the House interested in aeronautics should be formed, on strictly non-party lines, for the purpose of co-operating with the Government on aeronautical ques-

of the highest importance that every encouragement should be given to the development of aviation and ballooning from the side of pure sport.

In this way men of means will be induced to spend money, and are already doing so, which would never otherwise be available for conducting practical experiments.

When it is considered how much the development of automobilism owes to motor racing and touring it will be admitted that proportionately much greater results are likely to accrue from the development of aeronautics as a sport.

Again, the development of the science of the subject, by which the researches of the mathematician and physicist are brought to bear upon the most difficult of all problems of locomotion, is an even more vital necessity than is the case of marine navigation and railway engineering.

Lastly, in order that the Government may be induced to take up the subject seriously, and to spend sums of money also for the purpose, it is necessary to have the weight of public opinion strongly in favour of such a movement.

In order to accomplish this, public opinion should be educated ; further, a Parliamentary Committee should be formed consisting of members of both Houses, with the strict understanding that the whole question is one entirely outside party politics.

Now, it so happens that these three entirely separate fields of operation are at present the special work of three important bodies, viz. : Aeronautical Society, the Aero Club, and the Aerial League. It should be remembered, in the first place, that it would not be possible for any one of these bodies to do the work undertaken by either of the others. The functions of each are clearly defined and quite separate, and while it has been shown that the three different spheres are all in themselves vital to the general advancement of aeronautics, it would be undesirable for any one of the bodies to attempt to do the work of any one of the others.

As an example, it is clear that the public would never be influenced by a wealthy body instituted as a club, and mainly for the purpose of sport, in the same way that they would by an association on the lines of the Navy League, which was formed chiefly as a patriotic movement.

The mathematician and scientist would probably be more disposed to contribute information to a society whose object was largely if not entirely purely scientific investigation.

At the present moment an opportunity offers itself which will never occur again. During the last twelve months the War Office has been taking counsel with various bodies and individuals on the subject of aeronautics with a view to dealing with the pressing question of national aerial defence. It would be of the greatest advantage if the spheres of operation of the various aeronautical bodies could be so clearly defined that they could unite in assisting the Government to make the move forward for which the time is evidently ripe.

With this object in view, it is now proposed that the three bodies shall come to a definite written agreement to recognise the respective spheres of action of each separate body.

For the purposes of this agreement the Aeronautical Society shall be regarded as the paramount scientific authority on aeronautical matters, and shall be consulted on all questions dealing with the scientific side of the question.

The Aero Club shall be recognised as the paramount body in all matters of sport, and the development of the art of aeronautics.

The Aerial League shall be recognised as the paramount body for patriotic movements and for education.

In order to assist the Parliamentary Committee which is in process of formation, each of these bodies will nominate three of its members to advise and assist when required.

R. W. WALLACE, on behalf of the Aero Club.

H. C. MASSY, Colonel, on behalf of the Aerial League.

E. P. FROST, for the Aeronautical Society.

London, May 3rd.



AVIATION PARTY.

tions affecting the defences of the country. Mr. Arthur Lee was appointed Chairman, Mr. Cecil Harmsworth Vice-Chairman, and Mr. Arthur du Cros Hon. Secretary. The Premier's announcement in the Commons regarding the Government's proposals was noted with approval.

GREAT BRITAIN WAKES UP.

At last the Government seems to have thoroughly awokened to the importance of aeronautics as regards the national defence of the country. On Wednesday last, in reply to a question by Mr. R. C. Lehmann, the Premier made a very important statement regarding the intentions of the Government. Mr. Asquith's full statement was as follows :—

The Government is taking steps towards placing its organisation for aerial navigation on a more satisfactory footing. As the result of a report made by the Committee of Imperial Defence, the work of devising and constructing dirigible airships and aeroplanes has been apportioned between the Navy and the Army.

The Admiralty is building certain dirigibles, while certain others of a different type will be constructed at the War Office balloon factory at Aldershot, which is about to be reorganised for the purpose. The investigation and provision of aeroplanes are also assigned to the War Office.

With a view to securing that the highest scientific talent shall be brought to bear on the problems which will have to be solved in the course of the work of the two departments, the National Physical Laboratory has been requested to organise at its establishment at Teddington a special department for continuous investigation, experimental and otherwise, of questions which must from time to time be solved in order to obtain adequate guidance in construction.

For the superintendence of the investigations at the National Physical Laboratory and for general advice on the scientific

problems arising in connection with the work of the Admiralty and War Office in aerial construction and navigation, I have appointed a Special Committee, which includes the following names :—

Lord Rayleigh, O.M., F.R.S., president.

Dr. R. T. Glazebrook, F.R.S. (Director of the National Physical Laboratory), chairman.

Major-General Sir Charles Hadden (Master-General of the Ordnance), representing the Army.

Captain R. H. S. Bacon (Director of Naval Ordnance), representing the Navy.

Sir A. G. Greenhill, F.R.S., a former Professor of Mathematics at Woolwich.

Dr. W. N. Shaw, F.R.S., Director of the Meteorological Office.

Mr. Horace Darwin, F.R.S. (son of Charles Darwin).

Mr. H. R. A. Mallock, F.R.S., Civil Member Ordnance Committee.

Professor J. E. Petavel, F.R.S., Professor of Engineering at Manchester.

Mr. F. W. Lanchester, the well-known author of *Aerial Flight*.

Mr. Asquith's subsequent assurance to Mr. Arthur Lee that special and adequate funds had been placed at the disposal of the Committee and at the disposal of the War Office and Admiralty in order that the necessary work might be carried out without delay, gave the finishing touch to this splendid forward policy.

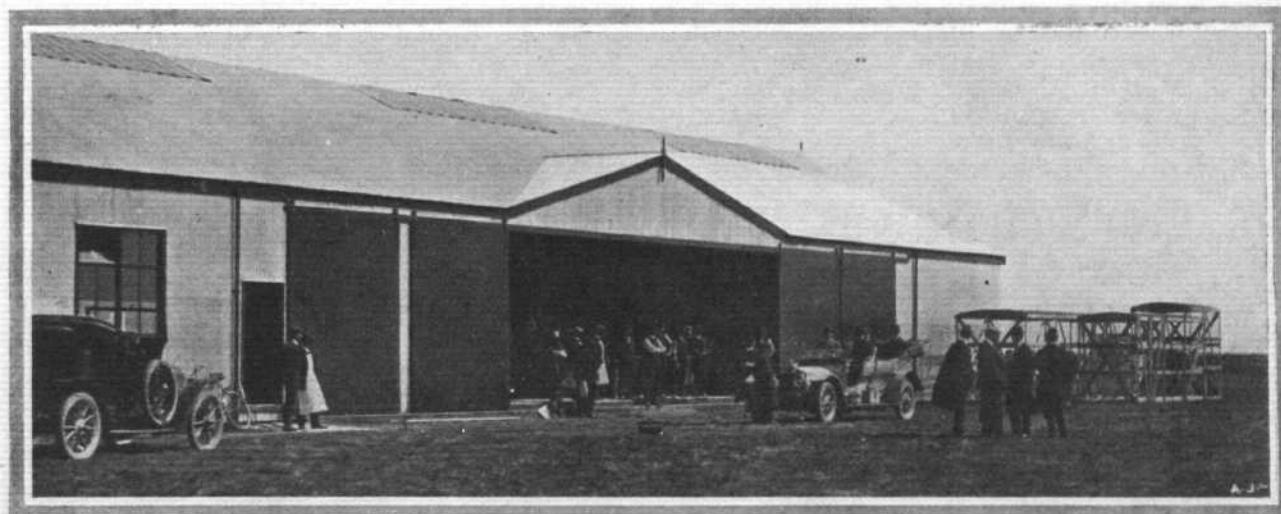
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WHAT THE WRIGHTS THINK OF THE AERO CLUB'S FLYING GROUND.

DURING their visit to the Aero Club's flying ground at Sheppeney on Tuesday, and also after their return to London that day, it was made abundantly clear both by Mr. Wilbur Wright and his brother that they were agreeably surprised with what they had seen. "This is the best flying ground I have ever seen. It is much superior in every way to those which we have used elsewhere. Here we have ample room for a ten-mile flight without obstruction, as against our four or five hundred yards in the States, and even if the wind is apt to be stronger its relative steadiness is more than adequate compensation for its greater strength." As regards the nature of the surface, Mr. Wilbur Wright was also enthusiastic in his praise. "Our experiences in Italy showed that runners slide quite easily on smooth grassy ground if the surface is damp, so that here we

could dispense with any starting-weight or rail." The primary object of the visit to Sheppeney was to inspect the Wright machines which are in course of construction in Messrs. Short's factory down there, but the opportunity was also seized upon by the Aero Club for introducing the brothers to the new ground, and several members of the Committee escorted the party to Shellbeach by motor car.

In referring to the subject at the Club banquet in the evening, Mr. Wilbur Wright not only spoke of the "magnificent" ground but also expressed the belief that "another period of high tide was approaching for England," and that the Club's flying ground would have a potent influence in enabling this country "to again occupy the position which its past aeronautical history justly entitles it to hold."



BROTHERS WRIGHT AT SHELLBEACH.—In front of Messrs. Short Bros.' factory, where the Wright flyers are being constructed.

"Flight" Copyright Photo.

AERO CLUB BANQUET TO THE WRIGHT BROTHERS.

VERY distinguished was the assembly which foregathered at the Aero Club's banquet at the Ritz Hotel on Tuesday evening to do honour to the Wright Brothers. Still greater would have been the list of prominent persons present had not the Budget necessitated the attendance of the Parliamentary leaders at St. Stephen's. As it was, there was an attendance of about 150—as many as the hall would hold—including:—

H.S.H. Prince Francis of Teck, the Hon. Whitelaw Reid, Lord Montagu, the Hon. Arthur Stanley, M.P., Mr. C. D. Rose, M.P., Admiral of the Fleet Sir Edward Seymour, Vice-Admiral Sir Percy Scott, Mr. Arthur Du Cros, M.P., Sir Henry Norman, M.P., Mr. E. Manville, the Hon. C. S. Rolls, Mr. F. H. Butler, Mr. Griffith Brewer, Mr. E. P. Frost, Sir Clifton Robinson, Professor Huntington, Colonel Bosworth, Sir Arthur Paget, Bart., Colonel H. S. Massy, C.B., Mr. E. Bucknall, Major Egerton Green, Messrs. J. T. C. Moore-Brabazon, V. Ker-Seymer, Commander Mansfield Cummings, R.N., Major F. Lindsay Lloyd, the Hon. M. Egerton, Mr. J. W. Orde, Capt. V. De Crespigny, Prince Michael Swaitfolk-Mirski, the Hon. Hy. Brougham, Col. the Hon. G. Napier, Messrs. P. Gardner, Martin Dale, S. F. Edge, M. S. Napier, Frank McClean, M. M. Bidder, Dr. Wm. J. S. Lockyer, Messrs. C. A. Moreing, James F. Ochs, Bertram Blount, Major-Gen. R. M. Ruck, Gen. Cummings, Mr. F. Coleman, Capt. J. Sealy Clark, Col. F. G. Stone, Mr. Warwick J. Wright, Col. F. C. Trollope, Messrs. Charles Jarrott, Paul Brodtmann, the Hon. T. E. Vesey, Messrs. Lawrence R. Phillips, T. P. Searight, Alec Ogilvie, John Kennedy, G. Holt Thomas, W. F. Adams, J. F. Wright, Jack Humphreys, Stanley Spooner, H. Massac Buist, T. B. Browne, Somers Somerset, W. Ballin Hinde, Hy. Rutter, Kenneth R. Campbell, F. R. Simms, Sir Edward Stern, Mr. U. Stratton, Capt. W. G. Windham.

Mr. Roger Wallace (Chairman of the Aero Club) presided, and Wilbur Wright sat to the right of the Chairman while his brother Orville was to the left. Miss Katherine Wright was also present.

Telegrams regretting inability to be present were received from the Prime Minister, Mr. Balfour, Mr. Haldane, Lord Roberts, Lord Salisbury, Lord Charles Beresford, Mr. McKenna, Sir E. Ward, and Admiral Neville.

The Duke of Argyll wrote from Kensington Palace: "I greatly regret that I am prevented from paying my tribute of admiration to Messrs. Wright. They are the first to realise successfully the dreams of all the centuries man has inhabited the earth. Let us hope that the land of petrol and prairie and aero-Wrights will set our folk an example it may not be too difficult for us to follow. The homage of the Aero Club voices all British good wishes and congratulations to the dauntless brothers."

After the loyal toasts had been duly honoured, the Hon. C. S. Rolls proposed "The Houses of Parliament," and referred to the fact that during the first two years the Wright Brothers were experimenting, the total time during which their several machines were aloft in the air only amounted to ten minutes. After two years' work they decided that the problem was so complex that it would take anything from fifty to a hundred years to solve it. Now their work was destined to bring about one of the greatest changes the world had seen.

Lord Montagu, in replying, stated that nothing was more significant than the change of opinion in official circles which he realised on that occasion. The leaders of both sides of the House of Lords, Lord Crewe and Lord Lansdowne, listened most attentively to what was said on the subject during a recent debate, and

afterwards they both told him personally that they had begun more and more to realise the importance of this country taking an active interest in the subject.

The Chairman then proposed the health of the Wright Brothers, and referred to their extreme modesty and their sympathetic nature as shown by the fact that they were able to teach their pupils so quickly. Needless to say, the toast was drunk amid great enthusiasm, and Wilbur Wright, on rising to reply, was loudly cheered.

He said that it had been an intense pleasure to him to make even a brief visit to the little island which has occupied so big a place in the history of the world, and likewise so big a place in the history of flying. About a hundred years ago an Englishman, Sir George Cayley, carried the science of flying to a point which it had never reached before, and which it scarcely reached again during the last century. This period of high tide was followed by an ebb. But about fifty years ago another period of high tide arrived at a time when Henson, Wenham, and Stringfellow raised the hopes of the world, and carried the art to a very fine point. After a period of depression, a third period of high tide came when Maxim and Philips and their friends again placed England in the lead in regard to flying; and perhaps it was the irony of fate that brought further success in a period when flying in England was at the ebb tide. It had been his pleasure to inspect that day the Aero Club's magnificent ground for flying experiments, and from what he had seen of the preparations there, the suitability of the ground, and the earnestness of the people, he had no doubt that another period of high tide was approaching, and that England would again occupy the position which its history justly entitled it to hold.

Mr. Orville Wright also briefly replied, remarking that it had often been said that the English people were slow, cold-blooded, without enthusiasm, and inhospitable. They found these reports false, particularly since their arrival here. They had never met with such a cordial reception in all their travels as they had had here.

The toast of the visitors was humorously proposed by the Hon. A. Stanley, M.P., and in replying, the Hon. Whitelaw Reid said that the Wright Brothers were distinguished for traits not generally attributed to their countrymen. They were not able to make speeches, and had no need to—their deeds spoke for them. They had achieved the impossible, and beggared the "Arabian Nights." They had not rubbed a lamp, but they had found the magic carpet which would travel from one country to another. He was proud to see these men receive the congratulations of their mother country—for Great Britain was their mother country as well as his own. It was English blood that had done this thing.

Prince Francis of Teck also replied, pointing out that the dinner was one of the most important ever given by the Club, as it marked a new epoch that had opened in the world.

Sir Percy Scott, replying for the Navy, said that from one point of view the Navy did not admire the Aero Club or aeronautics. They had quite enough difficulties to encounter from above and below. He thought, however, that aeroplanes would be useful for scouting purposes. It would be very helpful if we could raise our eyes a few thousand feet and see what our enemies were doing, and impart that knowledge to our friends by the aid of wireless telegraphy, and he expressed a hope that the Wright Brothers would design a flyer, which could be carried on a ship, for this work. If they did so, he was sure the Admiralty would provide a suitable ship to carry it.

PRESENTATION OF THE AERONAUTICAL SOCIETY'S MEDAL.

AFTER attending a private dinner given by the Council of the Aeronautical Society on Monday evening, the Wright Brothers adjourned to the hall of the Institution of Civil Engineers, where a very large and enthusiastic gathering of the members had assembled to witness the presentation of the Society's Gold Medal to the "Kings of the Air." The chair was taken by Mr. E. P. Frost, President of the Society, and among the guests on the platform were Lord Montagu of Beaulieu, Sir Hiram Maxim, General Baden-Powell, Col. Capper, Col. Trollope, Lieut.-Col. Templer, Mr. Roger Wallace, chairman of the Aero Club, Col. J. D. Fullerton, Major Baden-Powell, Mr. E. Stuart Bruce, Dr. H. S. Hele-Shaw, the Hon. C. S. Rolls, Mr. S. F. Cody, Mr. F. H. Butler, and Mr. V. Ker-Seymer.

In opening the proceedings, the chairman said it really needed no words to introduce their distinguished visitors. Their names were known all over the world and would go down to posterity. They were, indeed, the embodiment of energy, perseverance, and ingenuity.

Major Baden-Powell gave a *résumé* of the early work of the Bros. Wright, and told how, in spite of temporary failure and ridicule, they had quietly kept at their work until they had solved the problem of free flight and achieved their ambition of being the first men to fly.

Col. Capper, chief of the balloon department at Aldershot, said that some years ago he had the privilege of visiting the Wright family in their home, and the great kindness extended to him then

would never be forgotten. He thought all those who knew them would agree that even greater than their splendid invention was their charming character, their simple-minded honesty, kindness, and their genuine friendship. As to the value of their invention, it was impossible to say what may be the effect of flight on our country and on all the nations of the world from the points of view of war and of peace. The nation that got left behind might get very badly left. He hoped that when next the Wright Brothers visited these shores they would find us able to show them something, and to compete in friendly rivalry with them. Col. Capper then called for three cheers, and a scene of general enthusiasm followed, the company joining in singing "For they are jolly good fellows."

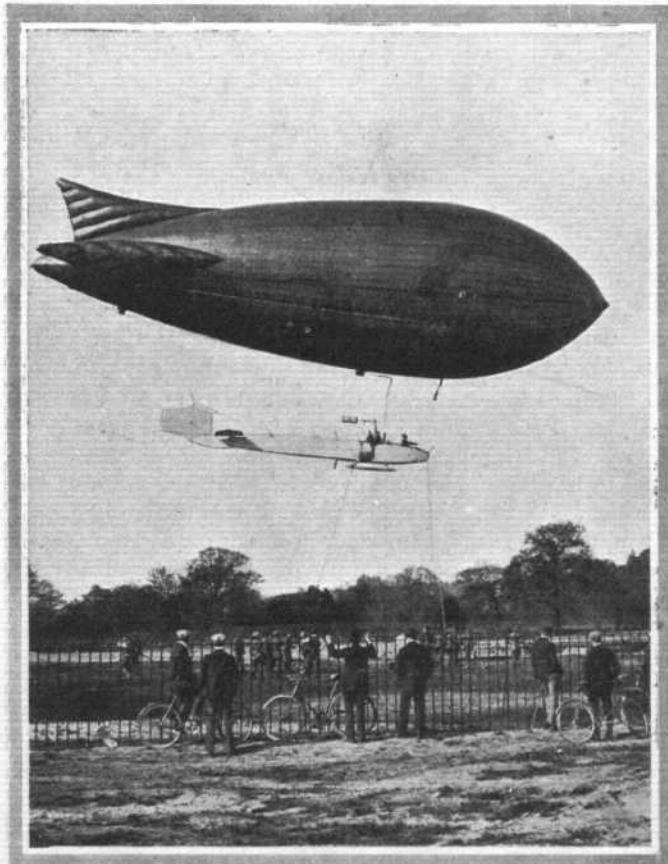
After Mr. E. S. Bruce had made a short speech eulogising the achievement of the Wright Brothers, the Chairman formally made the presentation of the Gold Medals.

After the prolonged applause had subsided, Mr. Wilbur Wright said that it was with a feeling of peculiar pleasure that his brother and himself found themselves able to be the guests of the Society, a Society which they had known by reputation—and to a great extent by the names of the individual members—ever since they had been studying the problem of flying. More than fifty years ago, at a time when flying was little thought of in the world, some of the



THE NEW BRITISH ARMY DIRIGIBLE.

ON Tuesday the new Army experimental dirigible to which we referred last week was given a short airing at Farnborough. Unlike the "Dirigible I," the balloon of the new airship follows the general lines of those in use by the French Army, but, as will be seen, it is fitted with three triangular cushion-like appendages somewhat in the nature of fins at the after end. The envelope is about 100 ft. long, and has a capacity of about 35,000 cub. ft. A boat-shaped car is suspended about 15 to 20 ft. below the gas-bag, and contains two 12-h.p. motors for driving the propellers. For taking any shocks when landing, a set of spring sledge-like runners are placed under the



The new British Army experimental dirigible balloon, which made its first appearance at Aldershot, outside its dock on Tuesday last.

citizens of England banded themselves together to form this Society, and through all the years which had followed, during times when any talk about flying was considered ridiculous, and all the people who thought about it were laughed at, this Society met every season to consider the subject of flying, to report the work which its individual members had been doing, to publish papers which they had read, and to spread them throughout the world for the benefit of others. After nearly fifty years at last we find man flying. For this reason, and during all these years, until very recently, in fact, until after man had begun to fly, the Aeronautical Society of Great Britain was the only Society in the world, as far as he knew, devoted to the subject of flight as distinguished from ballooning. Therefore, it was with a feeling of special pride that they had received the medal that evening, and they thanked the Society and its members most especially for their kindness.

When the cheering was over, Mr. Orville Wright rose and said he would not attempt to reply. He only wished to express his thanks for the very kind welcome the English people had accorded them, and for the way the Society had honoured them that evening.

Afterwards the company adjourned for light refreshments, and the two brothers were soon surrounded by a crowd of members, and were kept busily engaged answering questions until the company broke up at about a quarter to eleven.



forward part of the car. It will be noticed that a large balanced rudder is fitted, while on each side of the car there is a horizontal plane for assisting the operation of ascent and descent. No attempt at free flight was made, the airship being held down by parties of the Royal Engineers, while Col. Capper and his assistant were engaged in adjusting the ballast, &c.



GOVERNMENT ENCOURAGEMENT IN FRANCE.

IT will be remembered that some little time ago the French Government resolved to set aside a sum of 100,000 francs for the encouragement of aviation in France. A grant out of this of 43,000 francs has just been made to the Aero Club of France, and at the same time a presidential decree has been issued by M. Barthou, Minister of Public Works, recognising the activity and the authority of the Ae.C.F.

Already 31,000 francs of this sum have been tentatively allotted by the Club, the biggest prize suggested being one of 14,000 francs for the flying machine which makes the longest voyage outside an aerodrome. This prize will be divided into four parts, 5,000 francs going to the aviator, 4,000 francs to the builders of the machine, 3,000 francs to the makers of the motor, and 2,000 francs to the maker of the propeller. The other prizes which are proposed include one of 9,000 francs for the machine which, at the end of the year, has remained aloft for the longest period; 8,000 francs for the dirigible which has made the longest journey in a closed circuit; 8,000 francs for the dirigible which has accomplished the greatest distance across country; and 2,000 francs for the airship of less than 1,500 cubic metres capacity which makes the best speed over a closed circuit not more than 50 kilometres round.

With regard to the remainder of the subsidy, it is probable that 35,000 francs will go to the Ligue Nationale for the student-pilots, and 5,000 francs to the Société de Navigation Aérienne. The latter has been requested by the Government Commission to prepare a complete report on the subject of aerial navigation. A certain sum will be set aside for future contingencies, and what remains will be divided between the Aero Club of France and the towns of Pau and Douai, and other active centres of aeronautic work.

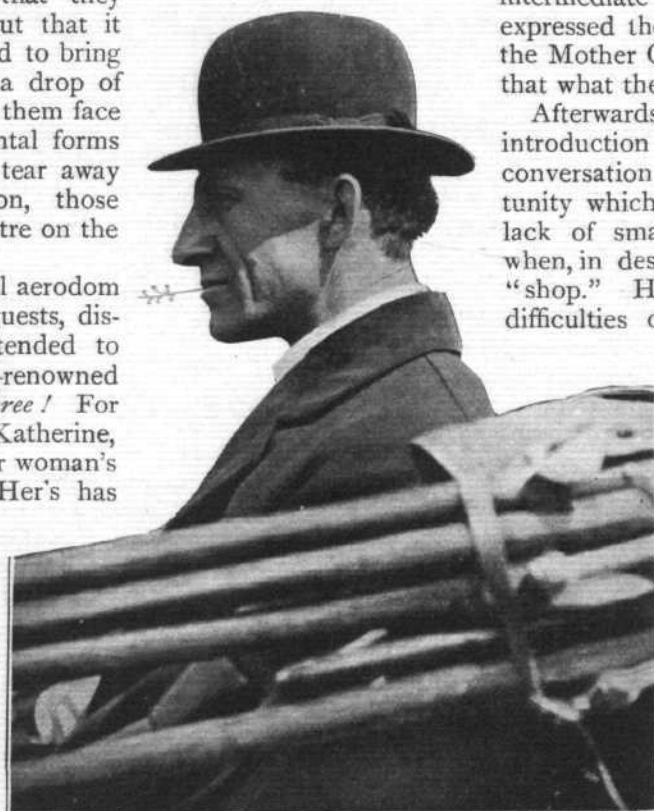
THE WRIGHTS—A PERSONAL IMPRESSION.

By "THE FLY."

LIKE most of life's real pleasures, this last which Fate sent me came suddenly and unexpectedly; anticipation and realisation were merged in one, so brief was the period of their separation. Less than a week ago Wilbur Wright was, how shall I say, a potent influence, perhaps, but little more than a name, in the sense that he was so far removed from my particular little sphere of action which I call life that the mind instinctively classified him among the great Unknown Personalities.

Then came the announcement of the Aero Club banquet—the Wrights were on their way to England, and would be at the Ritz on Tuesday. In England: of course, one had always known that they would come over some day, but that it should be this very week seemed to bring them out of the clouds with a drop of unanticipated swiftness. To see them face to face, and change illusive mental forms for concrete men, perchance to tear away the veil for good by conversation, those were the hopes which threw a lustre on the intervening days.

And then the night arrived; all aerodrom assembled to do honour to its guests, distinguished men of all ranks attended to give welcome to the world-renowned brothers. At last they came, all three! For the moment I had forgotten Miss Katherine, yet she is one of them, and her woman's part is noble and well played. Her's has



"Flight" Copyright Photo.
Wilbur Wright—a study.

Short of stature, quick in movement, Miss Katherine Wright gave an impression of personified activity, as brushing past with a murmured "I think I see someone I know over there," she darted away with true American directness to greet her friends. *Honneur aux dames*, but it was Wilbur I was waiting to see, and as he walked quietly into the room, followed by his brother Orville, I was not disappointed. Before me was the man of the century, and what I saw stirred every mental faculty to penetrate behind the surface of his physical shell.

Like their sister, the brothers are neither tall nor broad, but they are well-proportioned men, and Wilbur especially has a remarkable and altogether distinctive face, set off by a high-domed forehead and type of nose which somehow instantly reminded me of "Sherlock Holmes," as that character is portrayed in the illustrations of the *Strand Magazine*. His close-shut lips relax with most extraordinary mobility to join the normally downcast eyes in smiling. The whole attitude of the man is one of absolute composure, and indicates the complete subjection to the will of that mercurial energy his sister Katherine displays. And Orville is content

to watch while Wilbur thinks, even if there is not much that misses his enquiring eye.

Frequently throughout the dinner, the Wrights were in animated conversation with their neighbours. At one time Wilbur began a graphic description of a decorated model of his latest patent to Prince Francis of Teck. His speech in reply to the toast of the evening was a pure ray of his character, thoughtful, unassuming, generous. An "irony of fate" he called it, that flight had come to be achieved at a time when England's aviation history, after having been successively brought to a high ebb by Cayley, Stringfellow and Maxim, was once more in an intermediate period of wane. Both men expressed the warmth of their feelings for the Mother Country, and there is no doubt that what they said they felt.

Afterwards, fortune favoured me with an introduction which led to a few minutes' conversation with both. It was an opportunity which, with a characteristic English lack of small talk, I was nearly spoiling, when, in desperation, I determined to talk "shop." Having been puzzled over the difficulties of designing a small machine,

I had been wondering all the evening what views Wilbur Wright himself might hold of the possibilities in that direction, and the opportunity to find out was too good to lose.—It is difficult to say with what question the enquiry started, but my subsequent impression was that of standing in front of a living oracle capable and willing to answer every question asked. The problem in my mind was concerned with the utility of trying to build an essentially small flyer, strictly limited to carrying the pilot, and the drift of the conversation

was intended to arrive at an opinion by an analysis of the Wright flyer itself.

I asked Mr. Wright what power he thought he really utilised in horizontal flight when alone on his machine, and to this he replied that it was probably about 16 h.p., although it depended so much on the skill with which the flyer was handled, because any departure from the correct velocity was attended with inefficiency. This leaves, Mr. Wright said, about 30 per cent. of the engine-power available for elevation, a manœuvre which he stated he was ordinarily able to carry out at a speed of about 5 or 6 feet per second. Compounded with a flight velocity of 50 or 60 ft. per sec. this means that the Wright flyer would ascend to higher regions *via* an aerial slope of about 1 in 10.

Asked what was the slope equivalent to his horizontal flight—a machine in horizontal flight is virtually going uphill, but the aerial gradient is flattened down by its passage—Mr. Wright said it would probably be about 1 in 6, which is, it may be mentioned, a less favourable value

than has sometimes been stated, inasmuch as it represents a total tractive effort of over $16\frac{1}{2}$ per cent., and would seem to indicate that a very liberal allowance has to be made for the effect of body resistance. On the other hand, Mr. Wright said that he did not find any great difficulty in getting high values for his transmission efficiency and in the propellers. The accomplishment of carrying a passenger or so is, as Mr. Wright admitted, achieved by the aid of the surplus power otherwise necessary for

attaining elevation, and as he was summing up the exigencies of one-man flight with reference to his own machine, it was not long before he remarked, "I don't think I should care at present to build one much smaller than that which I am using now." And thus, just as he was forced to terminate my unfair monopoly of his society did he speak the words I had been half expecting which confirmed the point of view I had arrived at but was so very reluctant to adopt.



AERO CLUB OF THE UNITED KINGDOM.

OFFICIAL NOTICES TO MEMBERS.

Fixtures for 1909.

May 22	...	International Balloon Race, Hurlingham Club.
June 23	...	Balloon Race, Hurlingham Club.
July 10	...	Balloon Race, Hurlingham Club.
July 17	...	Balloon Race, Hurlingham Club.
August 28	...	Gordon-Bennett Aviation Cup, Rheims.
October 10	...	Gordon-Bennett Balloon Race, Zurich.

International Balloon Race, Hurlingham.

The International Balloon Contest will take place at Hurlingham Club, Fulham, London, S.W., on Saturday, May 22nd, 1909.

Members are reminded that the entries should be made to the Secretary of the Aero Club, 166, Piccadilly, W., on or before noon, Wednesday, the 12th inst.

Members will be admitted free to Hurlingham Club on May 22nd on presentation of their Aero Club membership cards.

Gordon-Bennett Aviation Cup.

The Competition for the Gordon-Bennett Aviation Cup will take place at Rheims on August 29th next, and the Aero Club have already sent in three entries.

The Committee of the Aero Club will select three competitors to represent this club, and intending candidates are requested to notify the Secretary on or before the 31st May of their willingness to compete if chosen. Applications must be accompanied by a cheque for £20, the entry fee, which amount will be returned should the candidate not be selected. Up to the present four members have entered.

The full rules governing the contest can be obtained from the Secretary of the Aero Club of the United Kingdom.

The British Empire Michelin Cup.

The Michelin Tyre Co. has presented to the Aero Club of the United Kingdom, for competition by British aviators, a trophy of the total value of £500.

Annually, for five years, a replica of this trophy, together with a sum of £500 in cash, will be given to the successful competitor. This trophy will be competed for under the following conditions, *which shall apply for the first year only* :—

Conditions.

1. The holder of the cup for 1909 will be the competitor who, on March 31st, 1910, shall have accomplished the greatest distance on any heavier-than-air machine without touching the ground.
2. The minimum distance to be covered in order to qualify for this prize shall be 5 miles round two or more posts for the necessary number of circuits.
3. Entries must be made in writing to the Secretary of the Aero Club, 166, Piccadilly, London, W. At least two clear days' notice must be given by a competitor before making his attempt.
4. An entrance fee of 10s. will be charged, and a further sum of £1 must accompany every notification of an attempt by any com-

petitor under these rules. Every competitor must be a member of some recognised body dealing with aerial matters in the Empire, and shall, if called upon, satisfy the officials of the Aero Club of his ability to fly at least 500 yards, before making any attempt under these rules.

5. All attempts must be made between the hours of sunrise and sunset, in the presence of the official or officials appointed by the Committee of the Aero Club.

6. The recognised flying ground is at Shellbeach, Island of Sheppey, but the Committee of the Aero Club will be willing to entertain any other ground subject to the competitor paying the necessary expenses incurred.

7. The start for the records will be reckoned from the crossing over the starting line in actual flight.

8. Competitors must be British subjects from any part of the Empire, manipulating a British-made machine. All the principal parts of a competing machine must be British made. All decisions applying to this rule shall be given by the Chairman of the Aero Club, Mr. Roger W. Wallace, K.C., and failing him, by an arbitrator nominated by the President of the Institution of Civil Engineers. This shall not be held to apply to raw material, but all finished or manufactured parts of such machine must comply with the above condition.

9. The decision of the officials of the Aero Club on all matters connected with this competition to be final and without appeal.

Aero Club Prizes for Short Flights.

The Committee of the Aero Club offer prizes for short flights made by flying machines at their grounds at Shellbeach.

Four prizes of £25 each for the first four competitors who shall have accomplished a flight of 250 yards.

Three prizes of £50 each for the first three competitors who shall have accomplished a flight of 1 mile in a closed circuit.

Every competitor must be a member of some recognised body dealing with aerial matters in this country.

An entrance fee of £1 must accompany each attempt by any competitor under these rules.

Entries must be made in writing to the Secretary of the Aero Club, 166, Piccadilly, London, W. At least twenty-four hours' notice must be given by a competitor before making the attempt.

All attempts must be made between the hours of sunrise and sunset, in the presence of the official or officials appointed by the Committee of the Aero Club.

The start for the records will be reckoned from the crossing over the starting line in actual flight.

Competitors may only compete for one prize in any one flight.

The decision of the officials of the Aero Club on all matters connected with this competition to be final and without appeal.

HAROLD E. PERRIN, Secretary.

The Aero Club of the United Kingdom,
166, Piccadilly, W.



A Women's Aerial League.

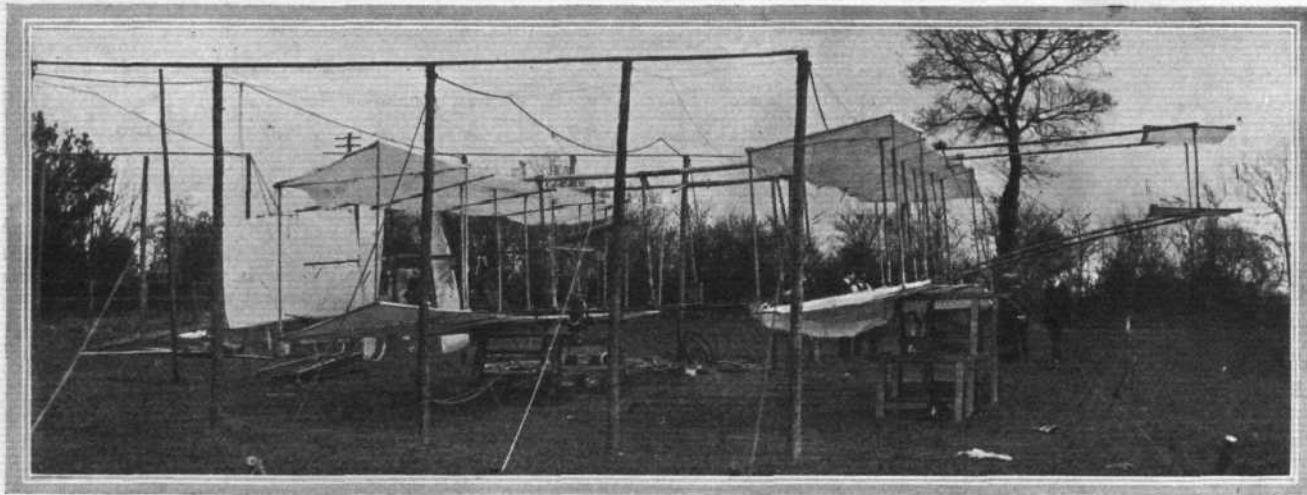
At a meeting held on Tuesday afternoon at Claridge's Hotel, under the presidency of Lady O'Hagan, it was decided to form a Women's Aerial League, which will be affiliated to the Aerial League of the British Empire. Mrs. Watt-Smyth was appointed Hon. Sec., and she will be pleased to hear from ladies interested in the League at the temporary offices at Staple Inn Buildings, High Holborn, W.C.

A HOLIDAY FLYER.

BEING THE RESULT OF AN ENTERPRISING THREE WEEKS' OCCUPATION ON THE PART OF SOME CAMBRIDGE UNDERGRADUATES.

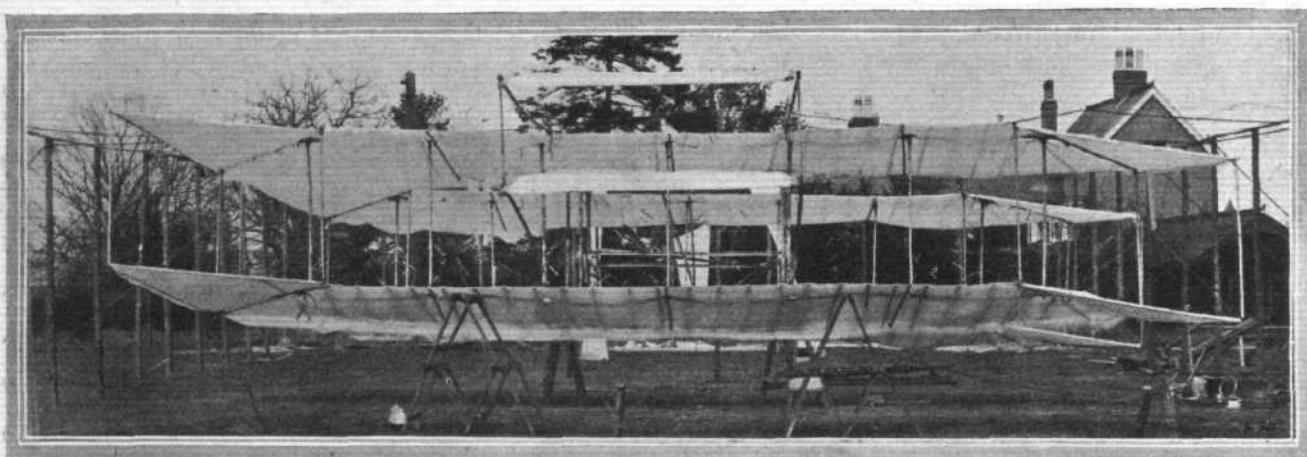
WHAT better way could there be of spending an Easter vacation—or for that matter any vacation—than by setting to work to build and experiment with a full-sized

aeroplane? A more congenial task for those with energy and leisure it is indeed difficult to imagine in this year of grace 1909, when all humanity is anxiously awaiting



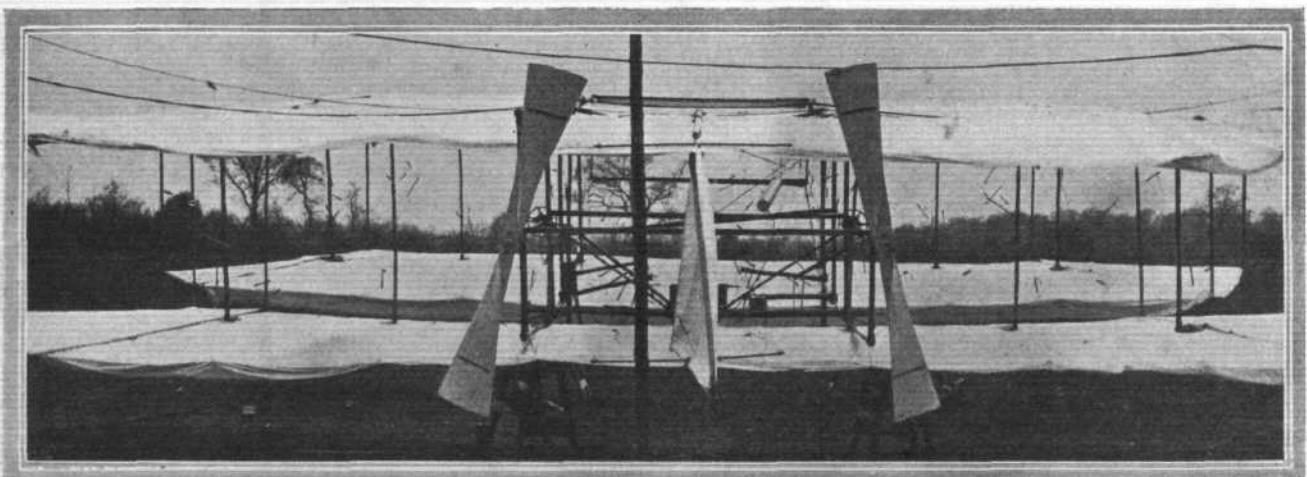
In order to secure the flyer against the wind, an open-air "hangar" was constructed of poles and ropes. The above is a side view of the machine, showing the tandem arrangement of the biplanes.

"Flight" Copyright Photo.



"Flight" Copyright Photo.

Corner pieces hinged to the main planes diagonally were provided as a means of controlling lateral stability. The photograph shows the pair on the right dipped, while those on the left are tilted.



"Flight" Copyright Photo.

Two wooden propellers were arranged to be driven by one continuous chain, so that if the chain broke both would be disabled.

the speedy maturity of the new era of flight. And the prospects, too, of such an undertaking! At worst, a healthy time in the open air, combined with hour after hour of absorbing interest; while at best, success in the conquest of a difficult task which very few men have as yet actually accomplished.

Thus, with variations, were the thoughts of a party of go-ahead Cambridge undergraduates, Messrs. H. H. Franklin, A. E. Löwy, C. M. Spielmann and H. W. Holt to wit, when they evolved a mutually satisfactory design during term, when they bought the engine in advance, and when they ordered material in readiness to make an immediate start once they had established themselves with their host, Mr. Franklin, in his ideal home on the Chiltern Hills. Here, with a large field ready to hand as a prospective aerodrome, constructive operations were commenced without delay, and soon four large calico planes began to spread themselves to the fickle breezes. Bamboo spars and struts, assisted by diagonal bracing of piano wire, came into use for the main framework; and overhead was erected a skeleton "hangar" of rough wood posts and hempen ropes to prevent the whole device taking a premature leap into the air, as it frequently seemed inclined to do when the wind was gusty. Everything was nearly ready just in time to allow of one or two actual trials before vacation ended; but "there's many a slip" in experimental work, and as events turn out fate denied its favour at the eleventh hour by causing one of the chassis wheels to give way, too late to allow of making good the damage. Reluctantly, therefore, the flyer had to go into retreat ere an actual flight was made with it, but even the building of it was an experience of value, as it afforded an insight into many little details otherwise apt to be totally overlooked by the enthusiastic experimenter.

There was the general design to be prepared in the first place, and the natural desire to make it original, which led to the construction of a double biplane type, that is to say, one having four main planes totalling 540 square feet in area arranged tandem-wise in biplane formation. The idea was to obtain greater stability by having two centres of aerial support, fore and aft of the pilot respectively, it being assumed that a slight increase in the angle of the rear planes would suffice to render them effective in the "wake" of the front planes. In setting out the curves Sir Hiram Maxim's book came in handy, as it did also in connection with the wooden propellers, a pair of which, most carefully made and finished, but possessed of curious concave bosses, were arranged to be driven on parallel shafts by one continuous chain from the 12-h.p. twin-cylinder air-cooled Buchet engine.

Lack of opportunity prevented the motor from acknowledging its appreciation of this implied compliment to its capacity, for it was, of course, asking rather a lot of it, bearing in mind that the flyer itself was by way of being full-sized, and that even Mr. Wilbur Wright rates his engine at 25-h.p. or thereabouts. Among the special features of the flyer was a system of control for giving stability by the use of hinged corner pieces on the extremities of each of the main planes. These corner

pieces, as our illustrations show, were hinged diagonally and so arranged that their front edges dipped or tilted to vary the angle of inclination. The use of the front edge for this purpose is contrary to the general principle adopted by other experimenters who, when employing flexing systems, invariably govern the angle by the movement of the trailing edge. It would have been interesting to have been able to observe the character of the control afforded by this change of method. The articulation of the planes was designed to be operated from a central vertical pole placed directly

Portraits F



"Flight" Copyright Photo.

The pilot, in this case Mr. H. H. Franklin, sits in the wire-suspended "chair" marked "Tea," and controls the lateral stability of the machine by the vertical pole held at the moment by Mr. A. E. Löwy, co-designer and builder.

in front of the pilot's seat, which was mounted just behind the front planes, the engine—constituting the other portion of the carried load—being situated just in front of the rear planes. This pole was connected to the corner pieces by wires arranged diagonally, and the system was such that practically any combination could be obtained from a direct movement of the pole. In front of the forward planes was an elevator, and behind the rear planes was a rudder, these latter members being under separate control. The machine, as a whole, was mounted upon wheels carried by compressed-air cylinders in such a way as to give a pneumatic suspension.

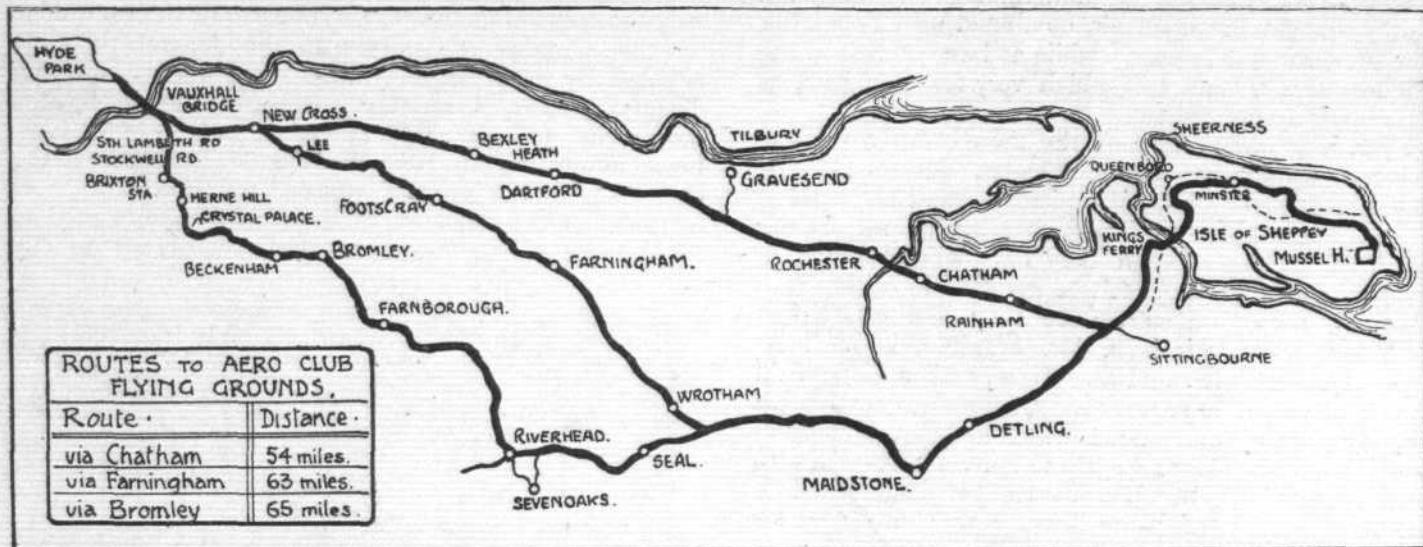


THE publishers have pleasure in announcing that they have secured a few of the back issues of FLIGHT, and any of our new readers who may wish to complete their sets may obtain the first eighteen numbers for 2s. 3d. post free, from the Publishers, 44, St. Martin's Lane, W.C.

BACK NUMBERS

OF "FLIGHT."

NEWS OF THE WEEK.



The least desirable route, although the most direct, is via Chatham, the road all the way to Chatham being very bad. The best route is via Footscray and Farningham, which is not only a good road, but is well sign-posted by the Motor Union. Out of London the Old Kent Road should be followed, branching off at New Cross.

The Wrights in England.

THE two days which were spent in England by the Wright Brothers and their sister on Monday and Tuesday last were very busy ones. On Monday morning there was a visit to the Aero Club, and the all-important visit to the War Office, where Mr. Haldane, the Secretary of War, was interviewed, as well as General Sir C. F. Hadden, Master-General of Ordnance, whose department deals with military aeronautics. Naturally enough, no details are forthcoming as to the result of these interviews, but the famous brothers appear to have had a favourable reception at the hands of the Government.

At a luncheon given at the Carlton Hotel, by Mr. F. H. Butler, the Wright Brothers were able to meet several prominent military authorities and others interested in flight, while in the evening, after attending a private banquet given by the Aeronautical Society, at a subsequent general meeting of the members of that body, the Wright Brothers were publicly presented, as recorded on page 260, amid great enthusiasm, with the Society's gold medal.

During the afternoon a visit was made to the Battersea works of Messrs. Short Brothers, who are building six

Wright flyers, and on Tuesday morning Shellbeach was visited by motor for the purpose of inspecting the Aero Club's flying ground there. Both the brothers were favourably impressed by the situation and nature of the ground, and Wilbur Wright gave it as his opinion that it was the finest flying ground he had seen, being far and away better than at Pau. A banquet in honour of Wilbur and Orville Wright was given by the members of the Aero Club at the Ritz Hotel on Tuesday evening, full details regarding which appear on p. 260, and the next day the party left London to resume their journey home.

Wright Brothers *en route* for Home.

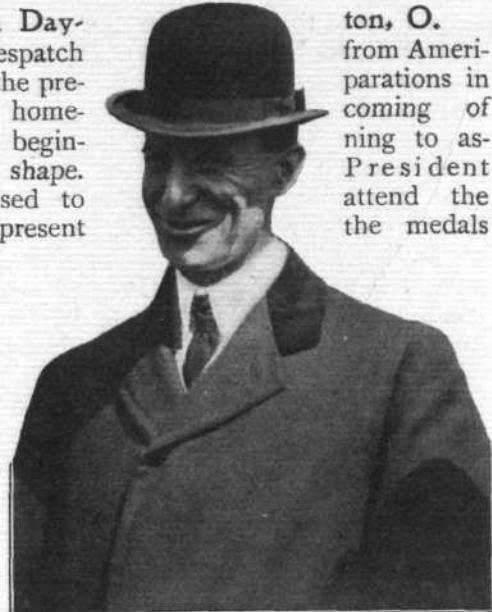
WILBUR AND ORVILLE WRIGHT and their sister were again in Paris together on Thursday of last week after the Rome visit, and spent a few days saying good-bye to their friends, a special trip being made on Saturday to Le Mans, where the famous brothers were presented with a bronze trophy (by Carvin) by the Aero Club of Sarthe. Altogether, Wilbur Wright will take home with him about twenty beautiful trophies which he has won or had presented to him. On Sunday, Orville and Wilbur Wright and their sister arrived in London.



Mr. A. V. Roe's British-built triplane, minus its rudder, which is undergoing tests on Lea Marshes.—It is fitted with a 6-h.p. Jap motor, has 9-ft. propellers, weight, light, 200 lbs.; plane surface, 350 sq. ft.

Preparations in Day-

FROM a despatch it seems that the preparations in Dayton for the homecoming of the Wrights are beginning to assume definite shape. Taft has promised to attend the celebrations and present which have been awarded to the brothers by Congress, and medals will also be presented by Governor Harmon on behalf of the State of Ohio and by Mayor Buckhardt on behalf of the



"Flight" Copyright Photo.
Wilbur Wright smiles.

ton, O.

from America in coming of ning to as President attend the the medals

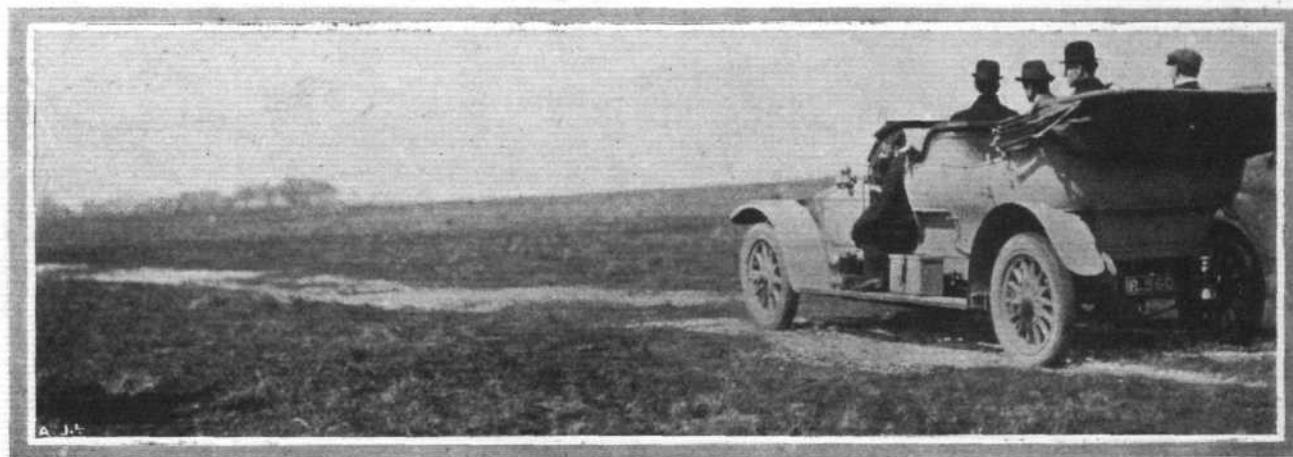
Lieutenant Calderara a Tutor.

As we anticipated, Lieut. Calderara passed through his novitiate with flying colours, and was duly installed as a tutor. Unfortunately, however, he met with a serious accident on Thursday of this week which has marred his success. He was flying at an altitude of 100 feet or thereabouts, when something went wrong, and the machine came heavily to the ground. At the time of going to press details of the cause are lacking, but the results are reported to be serious.

The first solo flight was made on Wednesday week, when the Italian officer flew for 10 minutes, and received a regular baptism in the new art, for during the time he was aloft a very heavy shower of rain fell. On Saturday last, after flying for 35 minutes with his pupil, Lieut. Savoia, the motor suddenly stopped, and the aeroplane came to earth with a thud, but no great damage was done. The officers were unhurt, but the starting lever was bent and one of the propellers was twisted a little.

M. Demanest Breaks Speed "Record" for Flight.

On Thursday week, at Chalons, M. Demanest, on his "Antoinette VI," succeeded in making a record speed.



"Flight" Copyright Photo.

BROTHERS WRIGHT AT SHELLBEACH.—Start for a run with the Hon. C. S. Rolls, on his Rolls-Royce car, round the Club's flying grounds.

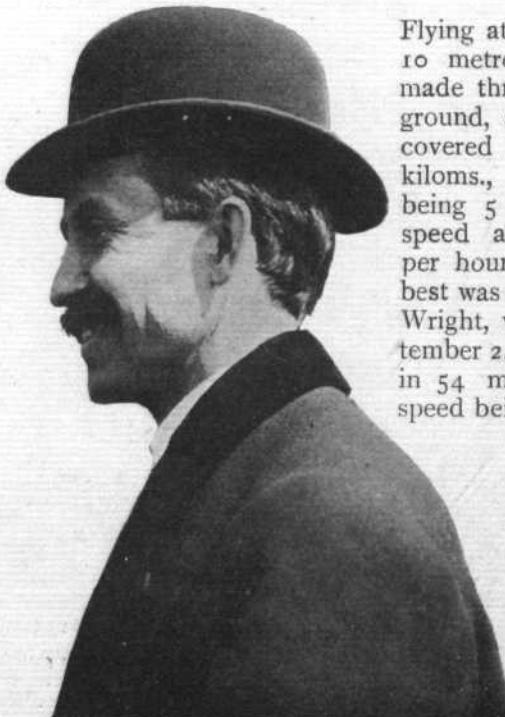
City of Dayton. The general arrangements for the homecoming include a public reception in one of the theatres or halls, to be followed by a concert, while on the next day it is proposed to have a flower parade and a banquet in the evening. These festivities will probably be held at the end of June after the Army tests at Fort Myer have been concluded.

Nine Months' Work.

So great and so rapid has been the advance made with the Wright flyer, that it hardly seems credible that it was only on August 8th last that Wilbur Wright made his first flight in France. On that date he flew for about a mile and a quarter on the Hunaudières Racecourse. Since then he estimates that he has flown between 2,500 and 3,000 miles.

Wright's Return to Europe.

THE mass of business which Wilbur Wright will find awaiting his home-coming will, he thinks, keep him detained in the States for a couple of months. After he has got through that, and the U.S. Army contract, he will return to England, and will probably be seen at the helm of one of the six Wright machines which are being constructed by Messrs. Short Bros. He will also be visiting Germany.



"Flight" Copyright Photo.
Orville Wright is amused.

Flying at a height of about 10 metres, M. Demanest made three circuits of the ground, and so must have covered between 6 and 7 kiloms., the time taken being 5 minutes, and the speed about 72 kiloms. per hour. The previous best was that of Mr. Wilbur Wright, who flew on September 24th last 55 kiloms. in 54 mins. 3 secs., his speed being 61 k.p.h.

On Friday, M. Demanest made another splendid performance, flying for about 15 kiloms. in 13 mins. 23 secs., the speed being 71 kiloms. an hour.

Mr. Moore-Brabazon Flies.

DURING last week-end Mr. Moore-Brabazon made his first flights in England at the Aero Club's new ground at Shellbeach, and although he did not attempt any very lengthy flights, this was only due to the fact that the apparatus needed a little adjustment after its re-erection. On Friday a flight of about 150 yards was made, while on the next day 200 yards were covered and the experiments were brought to a conclusion owing to the wind increasing in force. A still longer flight was made on Sunday, when a trip of 500 yards was made and could have been prolonged indefinitely but for the fact that certain parts of the mechanism were not working quite properly. In consequence Mr. Moore-Brabazon decided to come down, and in doing so met with a slight accident to one of the wings. By the time this is in print, however, this will be rectified, and Mr. Moore-Brabazon may at any moment be heard of accomplishing an appreciable journey in the air.

The Hon. C. S. Rolls enters for Cross-Channel Trip.

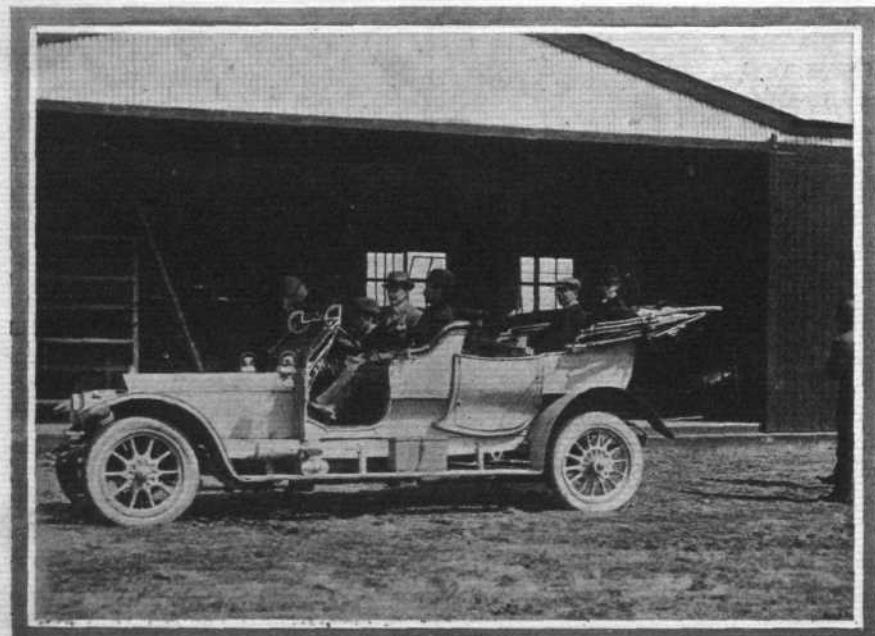
A WRIGHT flyer has now been entered for the *Daily Mail* Cross-Channel Prize, the Hon. C. S. Rolls having decided to make the attempt on the Wright flyer which is being built for him.

Mr. Cody Flies by Moonlight.

ON Tuesday night Mr. S. F. Cody had his aeroplane out, and made three short flights of from 50 to 100 yards by moonlight, and only terminated his experiments owing to the difficulty of distinguishing the various objects on Laffan's Plain. As a result of the trials, Mr. Cody expressed himself as very pleased with some modifications he has made, and hopes to make a long flight as soon as there is a spell of calm weather.

Lieut. Dunne's Aeroplane.

CONSIDERABLE interest has been aroused by an account of recent happenings in connection with the aeroplane experiments carried out in Scotland by Lieut. Dunne, which appeared in *The Times* of last Tuesday.



BROTHERS WRIGHT AT SHELLBEACH.—Ready for the return journey last Tuesday on Mr. Rolls' 6-cyl. Roll-Royce car. By Mr. Rolls' side is Mr. Orville Wright, and in the tonneau are Mr. Wilbur Wright and Mr. Griffith Brewer.

"Flight" Copyright Photo.

It was stated that a circular flight of 12 miles had been accomplished, but this Lieut. Dunne denies. He says that the longest flight attempted or accomplished was about 140 yards, the machine being operated by his friend, Lieut. Gibbs. In accordance with the Government's recent decision not to continue experimenting with aeroplanes, Lieut. Dunne's connection with the Army balloon factory was terminated in the same way as that of Mr. S. F. Cody, and, in like manner, his aeroplane was presented to him by the Government. He intends to continue his experiments during the coming summer, and his progress will be watched with friendly interest by the War Office, with whom his relations continue to be of the most cordial character. With regard to his machine, Lieut. Dunne states the great difference between his machine and the Wright flyer is that, whereas in the latter the balance is secured by the skill of the operator, in his machine it is automatic, a great consideration in machines intended for scouting purposes.

Count de la Vaulx Injured.

THE sympathies of all flying enthusiasts will be with Count Henry de la Vaulx, that good friend to all matters aeronautical, who met with a somewhat serious accident on Sunday. The Count, with a friend, started from Paris in a balloon on Saturday evening with the intention of making a long-distance voyage. The wind carried them in the direction of Marseilles, but apparently Count de la Vaulx decided not to cross the Mediterranean, for a descent was made near Arles. The high wind caught the balloon, and the two aeronauts were thrown out of the basket, Count de la Vaulx sustaining a broken leg. This is the first accident he has had in connection with his many aerial trips, but he has had the misfortune to break a leg before, the result of a tobogganing accident in Switzerland a couple of years ago.

At Pau.

COUNT LAMBERT has now another pupil, Herr Ganz de Fabrice, a German engineer and sportsman, who has secured a couple of Wright machines for Germany. The two new Wright flyers which were at Pont Long having been sent away, one to Rome and the other to Berlin, M. Tissandier has had to have recourse to Wilbur Wright's old machine, which he has had fitted with two new propellers.

Legagneux at Vienna.

ON the 27th ult. M. Legagneux, on Henry Farman's old machine, made a flight of over 2 kiloms. at Vienna before a number of Austrian Army officers. On the following day, however, he was not successful. He apparently tried to rise too quickly, for the machine lost its balance, and fell to the ground. It was considerably damaged, and the aviator slightly injured.

Reichstag Views Airship Flights.

WHAT Mr. Haldane did not dare to do the German Army determined to do, for they invited all the members of the Reichstag to witness a series of demonstrations with the military dirigibles at Tegel, near Berlin, on Wednesday last. The object of the little excursion was, of course, to rouse the enthusiasm of the legislators and so pave the way for the extensive aerial programme which is to be introduced into the German Parliament.

PRESENT STATUS OF MILITARY AERONAUTICS.

By GEORGE O. SQUIER, Ph.D., Major, Signal Corps, U.S. Army.

(Continued from page 253.)

SOME GENERAL CONSIDERATIONS WHICH GOVERN THE DESIGN OF AN AEROPLANE.

The design of an aeroplane may be considered under the heads of support, resistance and propulsion, stability and control.

Support.—In this class of flying machines, since the buoyancy is practically insignificant, support must be obtained from the dynamic reaction of the atmosphere itself. In its simplest form, an aeroplane may be considered as a single plane surface moving through the air. The law of pressure on such a surface has been determined and may be expressed as follows: $P = 2 k \sigma A V^2 \sin \alpha$ (1) in which P is the normal pressure upon the plane, k is a constant of figure, σ the density of the air, A is the area of the plane, V the relative velocity of translation as the plane through the air, and α the angle of flight.

This is the form taken by Duchemin's formula for small angles of flight such as are usually employed in practice. The equation shows that the upward pressure on the plane varies directly with the area of the plane, with the sine of the angle of flight, with the density of the air, and also with the square of the velocity of translation.

It is evident that the total upward pressure developed must be at least equal to the weight of the plane and its load, in order to support the system. If P is greater than the weight the machine will ascend, if less, it will descend.

The constant k depends only upon the shape and aspect of the plane, and should be determined by experiment. For example, with a plane 1 ft. square $k \sigma = 0.00167$, as determined by Langley, when P is expressed in lbs. per sq. ft., and V in feet per second.

$$\text{Equation (1) may be written } A V^2 = \frac{P}{2 k \sigma \sin \alpha}.$$

If P and α are kept constant, then the equation has the form $A V^2 = \text{constant}$. (2)

Principle of Reefing in Aviation.

An interpretation of (2) reveals interesting relations between supporting area varies inversely as the square of the velocity. For example, in the Wright aeroplane, the supporting area at 40 miles per hour is 500 sq. ft., while if the speed is increased to 60 miles per hour this area need be only $\frac{500}{1.2^2} = 222$ sq. ft., or less than one-half of its present size. At 80 miles per hour the area would be reduced to 125 sq. ft., and at 100 miles per hour only 80 sq. ft. of supporting area is required. These relations are conveniently exhibited graphically.

It thus appears that if the angle of flight be kept constant in the Wright aeroplane, while the speed is increased to 100 miles per hour, we may picture a machine which has a total supporting area of 80 sq. ft., or a double surface each measuring about $2\frac{1}{2}$ by 16 ft. or 4 by 10 ft. if preferred. Furthermore, the discarded mass of the 420 sq. ft. of the original supporting surface may be added to the weight of the motor and propellers in the design of a reduced aeroplane, since in this discussion the total mass is assumed constant at 1,000 lbs.

In the case of a bird's flight, its wing surface is "reefed" as its velocity is increased, which instinctive action serves to reduce its head resistance and skin-frictional area, and the consequent power required for a particular speed.

Determination of k for Arched Surfaces.—Since arched surfaces are now commonly used in aeroplane construction, and as the above equation (1) applies to plane surfaces only, it is important to determine experimentally the value of the co-efficient of figure k , for each type of arched surface employed, especially as k is shown in some cases to vary with the angle of flight α ; i.e., the inclination of the chord of the surface to the line of translation.

Assuming α constant, however, we may compare the lift of any particular arched surface with a plane surface of the same projected plan and angle of flight.

To illustrate, in the case of the Wright aeroplane, let us assume—

$$P = 1,000 \text{ lbs.} = \text{total weight} = W.$$

$$A = 500 \text{ sq. ft.}$$

$$V = 40 \text{ m.p.h.} = 60 \text{ ft. per sec.}$$

$$\alpha = 7^\circ \text{ approximately.}$$

Whence

$$\begin{aligned} k\sigma &= \frac{P}{2 A V^2 \sin \alpha} = \frac{1,000}{2 \times 500 \times 60^2 \times \frac{1}{2}} \\ &= 0.0022 (V = \text{ft. sec.}) \\ &= 0.005 (V = \text{m.p.h.}) \end{aligned}$$

Comparing this value of $k \sigma$ with Langley's value 0.004 for a plane surface V being in miles per hour, we see that the lift for the arched surface is 25 per cent. greater than for a plane surface of the same projected plan. That is to say, this arched surface is dynamically equivalent to a plane surface of 25 per cent. greater area than the projected plan. Such a plane surface may be defined as the "equivalent plane."

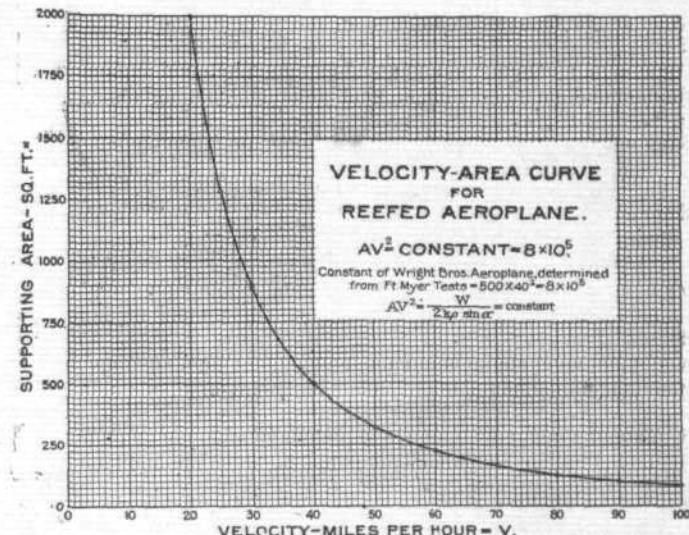


Diagram A.

Resistance and Propulsion.—The resistance of the air to the motion of an aeroplane is composed of two parts: (a) The resistance due to the framing and load; (b) The necessary resistance of the sustaining surfaces, that is, the drift, or horizontal component of pressure; and the unavoidable skin-friction. Disregarding the frame, and considering the aeroplane as a simple plane surface, we may express the resistance by the equation

$$R = W \tan \alpha + 2 f A \quad (3)$$

in which R is the total resistance, W the gross weight sustained, α the angle of flight, f the friction per square unit of area of the plane,

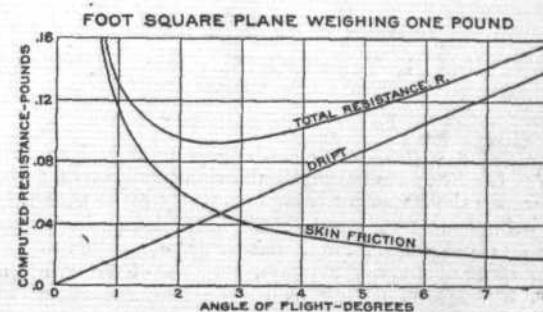


Diagram B.

A the area of the plane. The first term of the second member gives the drift, the second term the skin-friction. The power required to propel the aeroplane is $H = R V$, in which H is the power, and V the velocity.

Now W varies as the second power of the velocity, as shown by equation (1), and f varies as the power 1.85, as will be shown later. Hence we conclude that the total resistance R of the air to the aeroplane varies approximately as the square of its speed, and the propulsive power practically as the cube of speed.

Most Advantageous Speed and Angle of Flight.—Again, regarding W and A as constant, we may, by equation (1), compute α for various values of V , and find f for those velocities from the skin-friction table to be given presently. Thus α , R , and H may be found for various velocities of flight, and their magnitudes compared. In this way the values in Table I were computed for a soaring plane 1 ft. square, weighing 1 lb., assuming $k \sigma = 0.004$, which is approximately Langley's value when V is in miles per hour.

Computed Power required to Tow a Plane 1 ft. square, weighing 1 lb., Horizontally through the Air at Various Speeds and Angles of Flight.

Velo- city. m.p.h.	Angle of Flight. °	Computed Resistance. lb.	Tow-line Friction. lb.	Total. lb.	Tow-line Power. ft.-lb. sec.	Lift per lb.
30	8°25	0.145	0.0170	0.162	7.13	77.1
35	5°94	0.104	0.0226	0.1266	6.51	84.3
40	4°52	0.790	0.0289	0.1079	6.32	86.7
45	3°55	0.0621	0.0360	0.0981	6.39	86.1
50	2°88	0.0500	0.0439	0.0939	6.89	80.2
60	2°03	0.0354	0.0614	0.0962	8.50	64.7
70	1°47	0.0257	0.0814	0.1071	11.00	50.0
80	1°12	0.0195	0.1045	0.1240	14.56	35.8
90	0°88	0.0154	0.1300	0.1454	19.17	28.7
100	0°71	0.0124	0.1584	0.1708	25.00	22.0

Column two, giving values of α for various speeds, is computed from equation (1). Thus, at 30 m.p.h.,

$$\sin \alpha = \frac{W}{2 k \sigma A V^2} = \frac{1}{2 \times .004 \times 1 \times 30^2}, \text{ whence } \alpha = 8.25^\circ.$$

Column three is computed from the term $W \tan \alpha$ in equation (3), thus—

$$\text{Drift} = W \tan \alpha = 1 \times \tan 8.25^\circ = 0.145.$$

Column four is computed from the term $2 f H$, in equation (3), f being taken from the skin-friction table to be given presently.

The table shows that if a thin plane 1 ft. square, weighing 1 lb. be towed through the air so as just to float horizontally at various velocities and angles of flight, the total resistance becomes a minimum at an angle of slightly less than 3° , and at a velocity of about 50 m.p.h.; also that the skin-friction approximately equals the drift at this angle. The table also shows that the propulsive power for the given plane is a minimum at a speed of between 40 and 45 m.p.h., the angle of flight then being approximately 4.5° .

The last column of the table shows that the maximum weight carried per horse-power is less than 90 lbs. The horse-load may be increased by changing the foot square plane to a rectangular plane and towing it long-side foremost; also by lightening the load, and letting the plane glide at a lower speed; but best of all, perhaps, by arching it like a vulture's wing and also towing it long-side foremost, as is the prevailing practice with aeroplanes.

These relations are exhibited graphically in the diagrams, Figs. B, C and D.

(To be continued.)



CORRESPONDENCE.

* * * The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

BRITISH INVENTIONS AND FOREIGN ENCOURAGEMENT.

To the Editor of FLIGHT.

SIR,—In the correspondence which is taking place in various sections of the Press upon the all-absorbing subject of aerial navigation, we see the statement being constantly made that England is lagging behind in aeronautical development while foreign countries are making rapid progress, and that we are compelled to go abroad for the purpose of studying aviation, purchase of flying machines for patterns, &c. This feeling as to the lassitude in aeronautical matters in this country is very general, but the question arises, is there any justification for these misgivings? It would be well if the other side of the picture could be shown.

It is, I believe, a well-known fact that our best work was not on view at the Olympia Aero Show, and that most of our clever aviators have been working quite privately. Who are these "dark birds," and when will they be ready to give demonstrations? I think something ought to be done to bring our aerial engineers and experimentalists into the field this summer, otherwise it seems they must go abroad for assistance. It would appear that this will surely happen unless some practical scheme is organised for the purpose of giving the necessary financial support to our English aviators. I have knowledge of at least one inventor whose models are appreciated by foreigners, from whom he has received financial help, and representatives of other countries are asking for options on his inventions. It would surely be a sad shock to the English nation to see their own aeronauts coming over to this country on their machines—British inventions—built abroad owing to the lack of English enterprise. I would welcome any suggestions your numerous readers may have to make regarding a proposition whereby

this invention and others can be retained for pioneer work and national purposes, as I feel it is of the highest importance, and requires ventilation in the Press.

52, Shaftesbury Avenue, W.

Faithfully yours,
CHARLES D. CLAYTON.

SIR GEORGE CAYLEY.

To the Editor of FLIGHT.

SIR,—With reference to your article in FLIGHT of April 24th, "A Century Ago," I am in hopes of producing shortly further testimony of the knowledge of aerial flight gained by my great-great grandfather, Sir George Cayley. Among many things he made were the following: A choke-bore gun as used now, a bicycle, and a flying machine of the heavier-than-air type, which flew by means of an engine of his own construction. In this machine he inveigled his coachman, who jumped out on its leaving the ground, and broke his leg and the machine. The engine employed was driven by a number of explosions of gunpowder, each in a cell of its own, and discharged by a detonator. I hope shortly to see some of his many plans, which are still in existence.

It is curious that this engine should on its principle be so near to our present internal combustion engine. As a boy I remember parts of this engine, and various other mechanical contrivances, lying about.

Blackburn.

Yours faithfully,
ARTHUR CAYLEY.

WIRE GAUZE FOR AEROPLANES.

To the Editor of FLIGHT.

SIR,—In reference to my suggestion in FLIGHT of April 24th, I beg to point out that the prices of aluminium wire have changed greatly since 1893; instead of being 25s. a lb. wire of 14 mm. diameter is 1s. 6d. per lb., and larger sizes less.

Since 1893 the firm with which I am connected have become makers of aluminium sheets and wire, and aluminium wire is now used sometimes in place of copper wire for electric currents, on account of being cheaper from an electrical conductivity point of view.

I intend to have some gauze made shortly extremely light and strong for aeroplane surfaces; it will be much stronger than fabrics, and will not cockle in wet or dry weather, or absorb damp or rust.

Helsby, near Warrington.

Yours truly,
G. CROSLAND TAYLOR.

THE HOLLANDS PROPELLER.

To the Editor of FLIGHT.

SIR,—Mr. Kay's line of argument as to the proper shape of propeller-blades is fallacious.

As to his questions, they have already been answered, and authorities quoted, in these columns and elsewhere. I therefore refuse to be dragged into any further fruitless and unseemly wrangle.

Yours faithfully,

SYDNEY H. HOLLANDS.

[This correspondence is now closed.—ED.]



PUBLICATIONS RECEIVED.

Griffin's Scientific Text Books. *The Force of the Wind*. By Herbert Chatley, B.Sc. London: C. Griffin and Co., Ltd., Exeter Street, Strand. Price 3s. net.



NEW COMPANIES REGISTERED.

Aviators' Finance, Ltd.—Capital £300, in £1 shares. Manufacturers of and dealers in aeroplanes, flying machines, and balloons (whether dirigible or otherwise), &c.



Aeronautical Patents Published.

Applied for in 1908.

Published May 6th, 1909.

8,591. A. WORSWICK. Propellers and wings for aeroplanes.
8,627. G. W. HART. Wings of flying machines.
22,528. L. J. MAYER. Landing places for aerial vehicles.
26,381. R. LEHMANN AND J. HEINZE. Aerial projectile.

Applied for in 1909.

Published May 6th, 1909.

1,528. F. KOPSCHE. Flying machines.